

REMARKS

Applicants appreciate the Examiner's thorough consideration provided the present application. Claims 1 and 4-9 are now present in the application. Claim 1 has been amended. Claims 2 and 3 have been incorporated in claim 1 and hereby cancelled. Claim 1 is independent. Reconsideration of this application, as amended, is respectfully requested.

Priority Under 35 U.S.C. §119

Applicants thank the Examiner for acknowledging Applicants' claim for foreign priority under 35 U.S.C. §119, and receipt of the certified priority document.

Information Disclosure Citation

Applicants thank the Examiner for considering the references supplied with the Information Disclosure Statements filed on January 7, 2005 and March 16, 2007, and for providing Applicants with an initialed copy of the PTO-1449 forms filed therewith.

Drawings

Applicants thank the Examiner for accepting the formal drawings of the instant application.

Claim Rejection Under Obviousness-type Double Patenting

Claim 1 stands rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of Henriksson, U.S. Patent No. 7,295,732. This rejection is respectfully traversed.

In particular, since claim 1 has been amended to incorporate the subject matter of claims 2 and 3, which are not included in the obviousness-type double patenting rejection, it is believed that this rejection should be withdrawn. Therefore, reconsideration and withdrawal of the rejection under the judicially created doctrine of obviousness-type double patenting are respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-6 and 9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Fan, U.S. Patent No. 6,101,300, in view of Asseh, U.S. Patent No. 7,139,485. Claims 1 and 7 [sic., claim 7] stand rejected under 35 U.S.C. §103(a) as being unpatentable over Fan in view of Asseh, and further in view of Waarts, U.S. Patent No. 6,212,310. Claims 1 and 8 [sic., claim 8] stand rejected under 35 U.S.C. §103(a) as being unpatentable over Fan in view of Asseh, and further in view of Farries, U.S. Patent No. 5,778,119. These rejections are respectfully traversed.

Complete discussions of the Examiner's rejections are set forth in the Office Action, and are not being repeated here.

In light of the foregoing amendments, Applicants respectfully submit that these rejections have been obviated and/or rendered moot. While not conceding to the Examiner's rejections, but merely to expedite prosecution, as the Examiner will note, independent claim 1 has been

amended to incorporate claims 2 and 3. In particular, independent claim 1 has been amended to recite a combination of elements including “a deflector provided in each of said first and second optical waveguide, the deflectors being arranged to deflect light propagating in one of the light guiding structures to the other light guiding structure by operation of said external resonator, wherein the deflector in at least one of said first and second optical waveguides comprises: a first tilted deflector arranged in said at least one of said first and second optical waveguides, and a second tilted deflector arranged in said at least one of said first and second optical waveguides, wherein said first tilted deflector and said second tilted deflector are superimposed upon each other, and arranged to deflect light out from said at least one of said first and second optical waveguides into two individual beams, and wherein each of said first tilted deflector and said second tilted deflector comprises a blazed Bragg grating.” Applicants respectfully submit that the combination of elements as set forth in amended independent claims 1 and 6 are not disclosed or suggested by the references relied on by the Examiner.

The Examiner has correctly acknowledged that Fan fails to teach an external resonator defined by mirrors. However, the Examiner turned to rely on Asseh and alleged that Asseh can cure the deficiencies of Fan. Applicants respectfully disagree.

In particular, Fan’s external resonator system 16 is located between two waveguides 12 and 14 while Asseh’s external resonator 6 encloses two waveguides. More specifically, the technology disclosed in Fan relies upon a complex resonator system between the two waveguides. In an exemplary embodiment of Fan, the resonator system 16 is configured with photonic crystals (see col. 2, lines 16-34). Asseh, on the other hand, relies upon an external resonator 6 defined by a first mirror 7 and a second mirror 8, which are provided on opposite sides and

outside the light guiding structures (see FIG. 10). Therefore, one skilled in the art would not have the motivation to replace Fan's external resonator system 16 with Asseh's external resonator 6 because Fan and Asseh take fundamentally different and totally incompatible operating principles on their systems and replacing Fan's external resonator system 16 with Asseh's external resonator 6 may make Fan's system inoperable.

Applicants also respectfully submit that in the claimed optical switch, a first tilted deflector and a second tilted deflector are located in a waveguide and are superimposed upon each other to deflect light out from the waveguide into two individual beams. The innovative use of superimposed blazed gratings provides a new tuning mechanism, i.e., a phase tuning mechanism (see page 4, line 27 through 6, line 2 and page 7, lines 3-7). Therefore, the combination of two optical waveguides between a pair of mirrors defining an external waveguide, and two superimposed and tilted deflectors in the form of blazed Bragg gratings in at least one of the waveguides, as recited in amended claim 1, will provide a novel and inventive optical switch that provides a phase tuning mechanism. This phase tuning mechanism allows the switch element to be turned from a "bar" state to a "cross" state without any need to employ wavelength detuning. The phase tuning mechanism can also be used for turning the switch to a "broadcast" state, which is an intermediate state between the "bar" and "cross" states (see also page 7, lines 2-30). These features are clearly absent from Fan and Asseh.

With regard to the Examiner's reliance on the other secondary references, these references have only been relied on for their teachings related to some dependent claims. These references also fail to disclose the above combination of elements as set forth in amended independent claim 1. Accordingly, these references fail to cure the deficiencies of Fan.

Accordingly, none of the utilized references individually or in combination teach or suggest the limitations of amended independent claim 1. Therefore, Applicants respectfully submit that amended independent claim 1 clearly defines over the teachings of the utilized references.

In addition, claims 4-9 depend, either directly or indirectly, from independent claim 1, and are therefore allowable based on their respective dependence from independent claim 1, which is believed to be allowable.

In view of the above remarks, Applicants respectfully submit that claims 1 and 4-9 clearly define the present invention over the references relied on by the Examiner. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103 are respectfully requested.

Additional Claim

Claim 10 has been added for the Examiner's consideration. Applicants respectfully submit that claim 10 depends from amended independent claim 1, and is therefore allowable based on its dependence from amended independent claim 1, which is believed to be allowable. Consideration and allowance of claim 10 are respectfully requested.

Additional Cited References

Since the remaining patents cited by the Examiner have not been utilized to reject the claims, but rather to merely show the state of the art, no further comments are necessary with respect thereto.

CONCLUSION

All the stated grounds of rejection have been properly traversed and/or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently pending rejections and that they be withdrawn.

It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact Cheng-Kang (Greg) Hsu, Registration No. 61,007 at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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